MECHANICAL CONNECTOR

TECHNICAL FIELD

The present invention relates generally to a mechanical connector mechanism and, more particularly, to a quick connector mechanism adapted to enable two elements to be quickly and easily connected together to perform a variety of functions.

BACKGROUND

Mechanical connectors are well known in the art, and are typically used to connect two mating portions together. Some connectors are specifically designed to enable quick and/or easy connection and disconnection. Pneumatic devices, for example, utilize a bearing/groove type of mating connection for quick connection of a supply device to a hose. In some cases, pneumatic device connectors include a male portion having an annular groove located around a protrusion, and a female portion having a mating aperture for the protrusion, a sleeve portion, an engaging member, and a spring. To connect the female and male portions together, the user forces the sleeve portion, which is biased by the spring, to a return position thereby allowing the engaging member to recede from the mating aperture. Once the engaging member is recessed, the user may insert the protrusion into the female aperture and release the sleeve, thereby allowing the engaging member to engage the groove. To disconnect the male and female portions, the user may reverse the order of the connection process.

Other quick connectors such as that disclosed in U.S. Patent No. 692,795, include a male portion having a plurality of outwardly extending tabs located radially around a central protrusion, a female portion having corresponding mating apertures for the tabs, and a biasing spring or gasket. This type of biased connector is often used in the housing and connection of electrical fuses and in the attachment of adaptors to power tools, and the like. During engagement, the user forces the male portion into the female portion, thereby overcoming the bias of a spring. As the central protrusion is inserted into the female portion, and the tabs engage with the apertures, the user twists the male and female portions relative to each other, thereby locking the tabs into the apertures. To disconnect the device, the user may reverse the order of the connection process.

While these types of quick connectors typically work well for their intended purpose, these and other connectors have limitations and problems that make their adaptation for other uses difficult, if not impossible. For example, the bearing/groove

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